Doug W. Dunham

From: Brad Hill [bhill@ci.flagstaff.az.us]
Sent: Thursday, July 17, 2008 7:49 AM
To: Drew M. Swieczkowski; Doug W. Dunham
Cc: E. Frank Corkhill; Sandra A. Fabritz
Subject: Flagstaff's SB 1575 Comments

Attachments: Flagstaff_Comments to SB-1575_July_17_08.pdf

Flagstaff_Comments to SB-1575_...

Greetings...after driving up to the Pines yesterday after our meeting, I realized I mis-used a word in the comments I provided to you regarding SB 1575. On page 4, paragraph 3, I should have used the word "month" and not "year" as written. The phrase should read "....enough water for 2,800 homes for one month". I apologize for the error.

In order to minimize confusion, I have attached a new document dated July 17, 2008 that reflects this single word change. Please disregard July 15th letter, a new "original" will be sent to you via the mail. If you have any questions or comments regarding the contents of the letter, please do not hesitate to contact me. Again, thanks for the opportunity to comment on SB 1575.

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Bradley M. Hill, R.G.
Water Resources Manager
Hydrologist
City of Flagstaff, Arizona
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City of Flagstaff

July 17, 2008

Doug Dunham
Deputy Assistant Director
Water Management Division
Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, Arizona 85012

RE: Comments on SB-1575 Water Adequacy Rule Modification

Dear Mr. Dunham, Doug

I would like to commend the Department and its staff for undertaking the challenging and extensive effort in the development of the draft rules & recommendations on changing the criteria to demonstrate the hydrologic physical availability for Water Adequacy as required by SB 1575. I believe moving away from the traditional approach of a maximum depth to water after 100-years of pumping is a good step, and using the concept of a percent maximum thickness remaining is a reasonable alternative for the Coconino Plateau.

In general, I would like to see the Department adopt a set of Rules that rural communities or Counties around the State could adopt to create sound, water management opportunities, if they individually elect to do so. This is especially important in Flagstaff since the Coconino Plateau region continues to grow, the regional geology is complex, our aquifers are deep and access to groundwater is very expensive due to the large depths to water. There needs to be a recognized balance between the costs of implementing the Water Adequacy Rules with the desire for our community to take a first step in water management to ensure long-term water resources for the Coconino Plateau region. When bringing the opportunity for sound water management to rural Arizona, the Department should consider incremental steps similar to the step wise process the State Legislature accomplished when they adopted the Groundwater Management Act in 1980 and its incrementally more stringent water management requirements during subsequent decadenal Management Plans after its passage.

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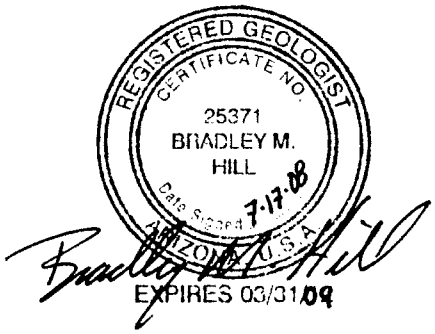
Thank you again for the opportunity to participate in your stakeholder process. Hopefully I have provided valuable input both verbally and in these written comments. My specific comments attached to this letter relate to the Hydrologic Data and Draft Recommendations – Public Comment Draft Report dated May 9, 2008, the Draft Rule Language dated May 14, 2008 and the numerous Stakeholder Meetings and presentations over the past several months.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Bradley M. Hill

Bradley M. Hill, R.G.
Water Resources Manager
Hydrologist



Attachment

c: Randy Pellatz, P.E., City of Flagstaff Utilities Director
Sandy Fabritz-Whitney, ADWR Deputy Director – Water Management
Frank Corkhill, ADWR Deputy Director - Hydrology

My specific comments are provided below:

1. **Designation v. Subdivision:** It appears that the proposed Draft Rule Language and Draft Hydrologic Data and Recommendations Report were written more towards approving individual subdivisions and not necessarily for a municipality wanting to obtain or maintain a Designation of Water Adequacy. I suggest the Department may want to consider bifurcating some of the requirements between a municipality seeking a service-area wide Designation versus a single subdivision seeking a water adequacy determination similar to how the Department's Active Management Area Assured Water Supply program is structured.

2. **Aquifer Testing:** The Draft Rule R12-15-716 Sections F.3 (c) & (d) proposes a different set of requirements depending on whether 70% or 50% of the aquifer is projected to remain after 100 years of simulated pumping. I suggest eliminating the 2-tiered approach and utilizing a single 50% saturated thickness criteria for ease of administering and complying with the Rule. This would eliminate potential disputes between the applicant and the Department on the computer model input parameters and their results of whether there is 70% or 50% saturated thickness remaining after projecting 100-years into the future. Additionally, from a hydrologist's perspective, I support the Department's desire to have longer term hydrologic data on the Coconino Plateau, especially when looking at a development with only a single well(s) for its water supply. In fact, even with multiple wells and water supply sources, the City of Flagstaff has been undertaking 10-day aquifer tests on each new well for a long-time just for this purpose. However, below are some suggestions to consider:

   A. Flexibility: The Department should consider flexibility in the length of time required for a pumping test instead of using ridged minimum requirements. I suggest using the phrase *"recommend a minimum 7 day test"* in place of the language *"at least a 7 day test"* for the following reason. As the Rule is currently written, the City of Flagstaff would be unable to utilize the aquifer test from its newest and potentially most productive well in the City's history to help demonstrate hydrologic physical availability. The aquifer test for the Ft. Tuthill well was scheduled to be conducted for 10 days; however the consulting hydrogeologist curtailed the test after 5 days, 3 hours after determining that further pumping would not gain significant beneficial hydrologic data beyond what was already obtained. Groundwater levels in the well only declined 115 ft or 8% of the saturated thickness and the water levels were stabilized (nearly asymptotic) for the entire 5-day test. Additionally, water

levels then recovered to within 95% in 2 hours and 98% in 10 hours of the pre-pumping water level. It would be a shame for the City not to be able to use this type of hydrologic data in its calculation of physical availability for a Water Adequacy determination because of this narrowly written language.

B. 30-Day Test with 50% of Estimated Saturated Thickness Remaining: Draft Rule R12-15-716 Section F.3 (d) (ii) requires an applicant to conduct at least a 30-day aquifer test. While this requirement clearly makes sense from a technical perspective, in northern Arizona this is an unrealistic expectation from a practical, water conservation and cost of compliance perspective.

First, this region of the State has mandatory water conservation restrictions and a 30-day test requirement would mean a significant volume of water will be wasted unless it can be put to beneficial use. For example, applying this criterion to a well that pumps 500 gpm would require the City of Flagstaff to pump onto the ground enough water for nearly ***2,800 homes for one month***. We often have citizens complain about why the City discharges water onto the ground for a 10-day test, let alone a 30-day test the Department is proposing. Additionally, our wells are typically located several miles from where the water will be utilized, limiting opportunities to put the water to beneficial use.

Second, the costs of conducting a 30-day aquifer test should be taken into account, as that might prove prohibitive for some communities or developments. As an example, the City of Flagstaff spends upwards of $200,000 solely on a 10-day aquifer test depending upon the availability of electrical power or if diesel generation is required. This is in addition to spending upwards of $1 million on the drilling and construction of the well itself. Some communities may not have the ability to spend this significant amount of money in addition to wasting significant volumes of water simply to comply with this proposed requirement.

3. Hydrogeologic Data including Drilling and Aquifer Testing at a minimum of 1 production well per square mile. This comment refers to Stakeholder presentations and the Draft Hydrologic Data and Recommendations Report (p. 50 & 51). Again, while I believe this is a reasonable concept from a technical perspective, the Department may want to consider flexibility or possibly modifying this requirement for those municipal water providers seeking a service area-wide Designation of Water Adequacy with multiple sources of water and infrastructure versus a subdivision with a single well.

For example, if this criterion is applied to Flagstaff's Red Gap Ranch, the Department would require a minimum of 13 water production wells to be drilled and tested at a cost of over $15 million prior to the Department approving an application of Water Adequacy. This seems extremely onerous especially in light of the fact that the Little Colorado River groundwater basin around Red Gap Ranch is pristine and undeveloped, the few existing wells in the vicinity are extremely productive and the U.S. Geological Survey and others have conducted several numerical groundwater modeling studies that all indicate significant natural groundwater recharge and a highly prolific and productive aquifer.

4. Long-Term Groundwater Monitoring – Phased Development: This comment refers to Stakeholder presentations and the Draft Hydrologic Data and Recommendations Report (p. 53). While this approach sounds reasonable in areas with limited data and for developments with a single water source, the Report states that water level monitoring must occur in "dedicated monitoring wells". I recommend that the Department maintain flexibility and not only utilize water levels from "*dedicated monitoring wells*" but also utilize water levels from other wells for the following two reasons:

   A. The City of Flagstaff has been monitoring groundwater levels in its well fields for over 50 years. Some of these valuable historic water levels are within dedicated monitoring wells, however, many are from water production wells that may or may not have been recently pumped. This requirement would eliminate the use of a significant history of groundwater data in the vicinity of Flagstaff.

   B. The City of Flagstaff's Lake Mary well field has numerous monitor wells – historically, water production wells have been pumped while adjacent monitoring wells have experienced zero drawdown. In extreme heterogeneous environments such as this, the City has relied upon the drawdown data within the production well as an indication of the well's long-term sustainability and not necessarily from the adjacent monitoring well.

   While I have heard that the Department is looking to modify this proposal to change this requirement to include other types of wells, I recommend changing the language in the Hydrologic Data and Draft Recommendations Report to reflect this update.